

Application No. 09/882,734
Amendment Date June 28, 2004
Reply to Office action of June 23, 2004

Amendments to the Claims

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-16 (canceled)

Claim 17 (currently amended): The A structure estimation module comprising:

- a. means to receive an image input;
- b. means to receive an application domain structure input;
- c. a preprocessing module that receives the image input having a pre-processed image output;
- d. a distributed estimation module that receives the pre-processed image and application domain structure inputs having an estimated structure output wherein the distributed estimation module comprises
 - i. a sub-region generation module having a sub-region output;
 - ii. a robust structure-guided estimation module that receives the sub-region output and a box caliper input having a feature parameter output wherein the box caliper robust structure-guided estimation module of claim 14 comprises:
 - (a) means to perform row-wise robust feature direction estimation and weight adjustment having an adjusted weight output;
 - (b) means to perform column-wise robust feature direction estimation and weight adjustment having an adjusted weight output;

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- (c) means to perform overall robust feature direction estimation and weight adjustment having a feature direction estimation result.

Claim 18 (currently amended): The A structure estimation module comprising:

- a. means to receive an image input;
- b. means to receive an application domain structure input;
- c. a preprocessing module that receives the image input having a pre-processed image output;
- d. a distributed estimation module that receives the pre-processed image and application domain structure inputs having an estimated structure output wherein the distributed estimation module comprises
 - i. a sub-region generation module having a sub-region output;
 - ii. a robust structure-guided estimation module that receives the sub-region output and a circle caliper input having a feature parameter output wherein the circle caliper robust structure-guided estimation module of claim 15 comprises:
 - (a) means to perform radial-wise robust center estimation and weight adjustment having adjusted weight output;
 - (b) means to perform angular-wise robust center estimation and weight adjustment having adjusted weight output;
 - (c) means to perform overall robust center estimation and weight adjustment having center estimation output.

Claim 19 (currently amended): The A structure estimation module comprising:

- a. means to receive an image input;
- b. means to receive an application domain structure input;
- c. a preprocessing module that receives the image input having a pre-processed image output;

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- d. a distributed estimation module that receives the pre-processed image and application domain structure inputs having an estimated structure output wherein the distributed estimation module comprises
- i. a sub-region generation module having a sub-region output;
 - ii. a robust structure-guided estimation module that receives the sub-region output and an arc caliper input having a feature parameter output wherein the arc caliper robust structure-guided estimation module of claim 16 comprises:
 - (a) means to perform radial-wise robust center estimation and weight adjustment having adjusted weight output;
 - (b) means to perform angular-wise robust center estimation and weight adjustment having adjusted weight output;
 - (c) means to perform overall robust center estimation and weight adjustment having center estimation output.

Claim 20 (original): A robust feature direction estimation and weight adjustment method for a group of box caliper sub-regions comprises:

- (a) for each sub-region, estimate the feature direction using line estimation without constraints;
- (b) for a group of sub-regions, estimate the feature direction using line estimation constrained by a parallelism relation;
- (c) compare the sub-region feature direction estimated in step (a), with the group direction estimated in step (b) and adjust weight for the sub-region based on an error function;
- (d) update and output the group of sub-regions box caliper estimate of the feature direction.

Claim 21 (original): A robust feature direction estimation and weight adjustment method for a group of circle caliper sub-regions comprises:

- (a) for each sub-region, estimate the center of a circular arc without constraints;

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- (b) for a group of sub-regions, estimate the center of circular arcs constrained by the same center point;
- (c) compare the sub-region center estimated in step (a), with the group center estimated in step (b) and adjust the weight for the sub-region based on an error function;
- (d) update and output the group of sub-regions center.

Claim 22 (original): A robust feature direction estimation and weight adjustment method for a group of arc caliper sub-regions comprises the following steps:

- (a) for each sub-region, estimate the center of a circular arc without constraints;
- (b) for a group of sub-regions, estimate the center of circular arcs constrained by the same center point;
- (c) compare the sub-region center estimated in step (a), with the group center estimated in step (b) and adjust weight for the sub-region based on an error function;
- (d) update and output the group of sub-regions estimate for the center of circular arcs.

Claim 23 (original): The method of claim 20 further comprising a step for re-alignment of the box caliper direction vector responsive to the group of sub-regions estimate of the feature direction output.

Claim 24 (original): The method of claim 21 further comprising a step for re-alignment of the circle caliper center location responsive to the output of the group of sub-regions estimate of the center of circular arcs output.

Claim 25 (original): The method of claim 22 further comprising a step for re-alignment of the arc caliper center location responsive to the output of the group of sub-regions estimate of the center of circular arcs output.